



## ATOP-R&D

### Human Factors Newsletter # 06-01

December 31, 2005 – January 13, 2006

#### Articles in this newsletter:

- *Expectancy and Performance on Time Critical Abnormal Maneuvers (Pilots)*
- *AT/SAT*
- *Information Sharing*
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**Technical Note:** *Expectancy and Performance on Time Critical Abnormal Maneuvers* (Tim Goldsmith, Peder Johnson, University of New Mexico)

The psychology literature is replete with evidence that humans perform faster and more accurately to expected than unexpected events. Surprise itself seems to suppress performance. Performance data show that pilots perform better on briefed than non-briefed maneuvers during maneuvers validation. Somehow expecting that a specific maneuver will occur allows a pilot to mentally prepare for the task, and this additional preparation or rehearsal results in better performance. The relationship between expectancy and performance suggests several questions relevant to pilot training and assessment. For example, does a pilots' performance on time-critical abnormal maneuvers as assessed during maneuvers validation (high expectancy condition) accurately reflect his future performance of these same maneuvers on the line (low expectancy condition)?

The University of New Mexico has been investigating the relationship between expectancy and performance in a series of laboratory experiments. Using flight simulator software equipped with yoke, throttle, and rudder/brake pedals, university students are trained to perform normal and rejected takeoffs. Performance on rejected takeoffs (due to engine failure) is measured by latency to pull back the throttle and deviation from center line. In a series of transfer of learning studies, subjects are first trained to perform normal and rejected takeoffs, and then in a transfer phase they perform a series of takeoffs where the occurrence of a rejected takeoff is rare. The results show that subjects' performance on unexpected rejected takeoffs is significantly lower than their baseline performance at the end of training.

The primary goal of the project is to discover types of briefings/warnings that will aid pilots' in maintaining optimal states of attentional readiness for unexpected events. To date, we have shown that a single warning immediately prior to an unexpected rejected takeoff eliminates skill decay, however both a general warning to expect a rejected takeoff and repeated warnings about the possibility of a rejected takeoff on each trial have little effect on moderating skill decay. We hypothesize that effective briefings/warnings will require pilots to vary processing of briefing information. The next phase of the study extends the research to general aviation pilots.

*This research activity supports the Administrator's Flight Plan Goal for Safety, Objective 1: Reduce the commercial fatal accident rate.*

Point of Contact: E. Edens, ATO-P R&D

**AT-SAT:** On January 22-24, 2006, Drs. Ray King, Carol Manning, and David Schroeder will travel to Washington, D.C., to participate in a briefing for the Administrator, Deputy Administrator, and representatives from the ATO and AHR regarding the air traffic controller selection test AT-SAT. The purpose of the briefing is to explain AT-SAT, how it was developed, and describe the reason for the re-weighting process and how it changed the test. *This research activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 1: Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better trained, safer, diverse workforce..* (C. Manning, CAMI)

**Information Sharing:** On January 30-31, 2006, Dr. Tom Chidester will travel to Washington, D.C. to participate in the Voluntary Safety Information Sharing (VSIS) Aviation Rulemaking Committee (ARC) meeting. Prior to joining the FAA, Dr. Chidester served as the Voluntary Aviation Safety Information Sharing Project program manager at NASA-Ames. At CAMI, he has been tasked to liaison with NASA to verify completion of the distributed archive infrastructure in accordance with specifications provided by the VSIS ARC. He will also provide subject matter expertise to the ARC in the development and completion of analyses. *This research activity supports the Administrator's Flight Plan Goal for Safety, Objectives 1 and 2: Reduce the commercial fatal accident rate; Reduce the number of fatal accidents in general aviation.* (D. Schroeder, CAMI)

**Electronic Flight Bag (EFB) Job Aid:** On December 30, 2005, Volpe researcher Divya Chandra, of the Operator Performance and Safety Analysis Division, delivered a final draft of the Electronic Flight Bag (EFB) Job Aid (Version 1.0) to FAA Flight Standards. The EFB Job Aid is a companion document to FAA Advisory Circular 120-76A, titled Certification, Airworthiness, and Operational Approval of Electronic Flight Bags. The goal of this document is to provide additional guidance to Principal Inspectors (PI) in Flight Standards District Offices on the evaluation and operational approval of EFB systems, and to facilitate the interaction of the PIs with the Aircraft Evaluation Group. This final draft was completed with the assistance of team members from FAA Flight Standards and Aircraft Certification. It is expected to be released to industry by the FAA early in 2006. *This research activity supports the Administrator's Flight Plan Goal for Safety, Objective 1: Reduce the commercial fatal accident rate.* (D. Chandra, VNTSC)

*More information on human factors research can be found at  
the FAA Human Factors (ATOP-R&D) web site: <http://www.hf.faa.gov>*

Paul Krois  
FAA (ATO-P R&D Human Factors)



**January 21-25, 2006** – ASHRAE Winter Meeting and Expo, Chicago, IL  
<http://www.ashrae.org/template/AssetDetail/assetid/45794>

**January 22-26, 2006** – TRB 85<sup>th</sup> Annual Meeting, Washington, DC <http://trb.org/calendar/>

**January 23-27, 2005** - S-18 Safety Assessment for Airborne Systems & Equipment  
San Antonio, TX, [lemon@sae.org](mailto:lemon@sae.org)

**February 9-10, 2006** - Swinburne University Symposium on Safety Management and Human  
Factors Symposium, Melbourne, Australia [janca@groupwise.swin.edu.au](mailto:janca@groupwise.swin.edu.au)  
<http://www.swin.edu.au/aviation/forms/2006SwinburneSymposiumCallforPapers.pdf>

**February 21-26, 2006** – Asian Aerospace 2006, Changi Exhibition Centre, Singapore  
[www.asianaerospace.com](http://www.asianaerospace.com)

**February 26-28, 2006** – Heli-Expo, Dallas, TX <http://www.heliexpo.com>

**February 28 – March 1, 2006** – 31<sup>st</sup> Annual FAA Aviation Forecast Conference, Wash, DC  
[http://www.faa.gov/news/conferences/aviation\\_forecast\\_2006/](http://www.faa.gov/news/conferences/aviation_forecast_2006/).

**March 2-3, 2006** – APA Division 21 (Applied Experimental Psychology), Division 19 (Military  
Psychology) and the Potomac Chapter, Human Factors and Ergonomics Society Mid-Year  
Symposium, George Mason University, Fairfax, VA  
<http://www.apa.org/divisions/div21/.homepage.html>

**March 12-14, 2006** – AirCargo 2006, Sheraton Bal Harbour, FL  
<http://www.aircargoconference.com>

**March 13-15, 2006** – Flight Safety Foundation 18<sup>th</sup> Annual European Aviation Safety Seminar,  
Athens, Greece <http://www.flightsafety.org/seminars.html#eass>

**March 20-23, 2006** – 16<sup>th</sup> Annual AAMI/FDA International Conference on Medical Device Standards and Regulation, Hyatt Regency, Reston, VA  
<http://www.aami.org/meetings/isc/index.html>

**March 22 - 25, 2006** - Society for Behavioral Medicine Annual Meeting and Scientific Sessions, San Francisco, CA [www.sbm.org/annualmeeting/index.html](http://www.sbm.org/annualmeeting/index.html)

**March 23-25, 2006** - 17th Annual International Women in Aviation Conference, Opryland Hotel Nashville, TN <http://www.wai.org/>

**March 23-27, 2005** – IA Summit 2006, Hyatt Regency, Vancouver, BC, Canada  
<http://www.iasummit.org/>

**March 28-30, 2006** – Aviation Industry Expo, Las Vegas, NV  
<http://www.aviationindustryexpo.com>

**April 4-10, 2006** – Sun ‘n Fun, Lakeland, FL <http://www.sun-n-fun.org/content/>

**April 6-7, 2006** – National Human Capital Summit, Chicago Marriott Downtown, Chicago, IL  
[http://www.humancapitalinstitute.net/conference\\_national.html](http://www.humancapitalinstitute.net/conference_national.html)

**April 18-20, 2006** – FAA Aviation Safety Programs Conference, Grand Hyatt Hotel, Denver, CO <http://www.aviationsafetyconference.com>

**April 22-27, 2006** – CHI 2006, Montreal, Quebec, Canada  
<http://www.chi2006.org/call/hcioverviews.php>

**April 23-28, 2006** - Avionics Systems Division Meeting, New Orleans, LA (TBD)  
[lemon@sae.org](mailto:lemon@sae.org)

**April 24-26, 2005** – ATCA/FAA/NASA Annual Technical Symposium, Atlantic City, NJ  
[http://www.atca.org/activities/event\\_items.asp?month=4&year=2006&item\\_id=3557](http://www.atca.org/activities/event_items.asp?month=4&year=2006&item_id=3557)

**April 25-27, 2006** – Maintenance, Repair & Overhaul (MRO) Conference & Exhibition, Phoenix Civic Plaza, Phoenix, AZ <http://www.aviationnow.com/conferences/mromain.htm>

**May 1-4, 2006** - 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference; 14th AIAA/ASME/AHS Adaptive Structures Conference; 7th AIAA Gossamer Spacecraft Forum; 2nd AIAA Multidisciplinary Design Optimization Specialist Conference; 1st AIAA Non-Deterministic Approaches Conference, Hyatt Regency Newport, Newport, RI <http://www.aiaa.org/>

**May 3-5, 2006** - 6th Annual European Business Aviation Convention & Exhibition (EBACE2006), Geneva, Switzerland <http://web.nbaa.org/public/cs/amc/>

**May 9-11, 2006** – Flight Safety Foundation 51<sup>st</sup> Annual Corporate Aviation Safety Seminar, Phoenix, AZ <http://www.flightsafety.org/seminars.html#eass>

**May 14-18, 2006** - 77<sup>th</sup> Annual Scientific Meeting of the Aerospace Medical Association, Caribe Royale Hotel, Orlando, FL <http://www.asma.org/>

**May 15-16, 2006** – DoD TAG, Las Vegas, NV <http://hfetag.dtic.mil/meetschl.html>

**May 15-16, 2006** – ASTM F38 Unmanned Aircraft Systems Committee Workshop, Sheraton Centre Toronto; Toronto, ON CAN <http://www.astm.org/>

**May 17-19, 2006** – 17<sup>th</sup> International Conference on Heating and Ventilation, Prague, Czech Republic <http://www.acv2006.cz>

**May 22-24, 2006** - 9th IFAC Symposium on Automated Systems Based on Human Skill And Knowledge, Nancy, France <http://www.cdc.gov/niosh/exhibits.html>

*May 23-25, 2006 – 2006 International Air Cargo Conference, Brown Convention Center, Houston, TX <mailto:terryiacc@bellsouth.net>*

**May 25-28, 2006** – American Psychological Society 18<sup>th</sup> Annual Convention, New York Marriott Marquis, New York City, NY <http://www.psychologicalscience.org/convention/>

**June 6-8, 2006** – IEE System Safety Conference, Savoy Place, London, UK <http://www.iee.org/events/event/CE202BA5-A0D3-8FE7-2F35A59A02C8B3F3>

**June 8-10, 2006** – NTSB Bar Association Annual CLE Conference, NTSB Conference Center, L'Enfant Plaza, Wash, DC <http://www.ntsbbbar.org/>

**June 11-14, 2006** – The American Society of Safety Engineers Safety 2006 Conference, Washington State Convention and Trade Center, Seattle, WA <http://www.asse.org/2006pdcallforpapers.pdf>

**June 12-16, 2006** – UPA 2006 – 15<sup>th</sup> Annual Conference, Broomfield, CO [http://www.usabilityprofessionals.org/conferences\\_and\\_events/upa\\_conference/2006/](http://www.usabilityprofessionals.org/conferences_and_events/upa_conference/2006/)

**June 24-26, 2006** – AAMI Conference & Exposition, Wash, DC <http://www.aami.org/proposals/index.html>

**June 24-28, 2006** – ASHRAE Annual Conference, Quebec, Canada <http://www.ashrae.org/>

**June 26-29, 2006** - [General Aviation Technology Conference](#) , Hyatt Hotel, Wichita, Kansas,

**July, 2006** - 26th International Congress of Applied Psychology, Athens, Greece [dgeorgas@dp.uoa.gr](mailto:dgeorgas@dp.uoa.gr) , [http://www.erasmus.gr/dynamic/conventions.asp?conv\\_id=21r/dynamic/conventions.asp?conv\\_id=21](http://www.erasmus.gr/dynamic/conventions.asp?conv_id=21r/dynamic/conventions.asp?conv_id=21)

**July 10-14, 2006** – IEA 2006, 16<sup>th</sup> World Congress on Ergonomics, Maastricht, The Netherlands  
<http://www.iea2006.org/>

**July 24-30, 2006** – EAA AirVenture, Oshkosh, WI <http://www.airventure.org/>

*July 26-29, 2006* – CogSci 2006, Sheraton Vancouver Wall Centre, Vancouver, BC, Canada  
<http://www.cogsci.rpi.edu/~rsun/cogsci2006/>

**August 10-13, 2006** – American Psychological Association Annual Meeting, New Orleans, LA  
<http://www.apa.org/convention05/future.html>

**August 21-24, 2006** - AIAA Modeling and Simulation Technologies Conference and Exhibit.  
Keystone Resort and Conference Center, Keystone, CO  
<http://www.aiaa.org/content.cfm?pageid=1>

**August 21-24, 2006** - AIAA Guidance, Navigation, and Control Conference and Exhibit,  
Keystone Resort and Conference Center, Keystone, CO  
<http://www.aiaa.org/content.cfm?pageid=1>

**September 6-8, 2006** - 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization  
Conference, Renaissance Portsmouth, Portsmouth, VA,  
<http://www.aiaa.org/content.cfm?pageid=1>

**September 10-14, 2006** - 54th International Congress of Aviation and Space Medicine,  
Bangalore, India. A preliminary registration form may be found at [http://www.isam-  
india.org/conference44/newreg.php](http://www.isam-india.org/conference44/newreg.php).

*September 12-14, 2006* – 23<sup>rd</sup> International Air Cargo Forum and Exposition, Calgary, Ontario,  
Canada <http://www.tiaca.org>

**September 20-22, 2006** – HCI-Aero 2006, Seattle, WA <http://www.eurisco.org/hci-aero2006>

Note: Submission Deadlines:

15th March 2006 - Full Research Papers

15 April 2006 - Industry Papers

15 April 2006 - Early Stage Research Papers

15 April 2006 - Panels, Workshops

15 April 2006 - Posters and Demos

**September 26-27, 2006** – AIAA Aviation Technology, Integration and Operations Conference,  
Hyatt Regency, Wichita, KS <http://www.aiaa.org/content.cfm?pageid=1>

**October 15-19-2006** – Digital Avionics Systems Conference, Hilton Portland, Portland, OR

<http://www.dasconline.org/>

*October 16-20, 2006 – Human Factors and Ergonomics Society Annual Meeting, San Francisco Hilton, San Francisco, CA <http://www.hfes.org/web/HFESMeetings/meetings.html>*

**October 17-19, 2006** – NBAA 59<sup>th</sup> Annual Meeting and Convention, Orlando, FL  
<http://web.nbaa.org/public/cs/amc/futuresites.php>

**September 25-27, 2006** - 6th AIAA Aviation Technology, Integration and Operations Forum, Hyatt Regency Wichita, Wichita, KS <http://www.aiaa.org/content.cfm?pageid=1>

**October 23-25, 2006** – 44<sup>th</sup> Annual SAFE Symposium, Reno Hilton Hotel, Reno, NV  
<http://www.safeassociation.org/symposium.htm>

**October 23-26, 2006** - DoD Maintenance Symposium & Exhibition, Reno Hilton, Reno, Nevada <http://www.sae.org/events/conferences/aerospace/>

**October 29 - November 1, 2006** – ATCA Convention and Exposition, Marriott Wardman Park, Wash, DC

**November 9-11, 2006** – AOPA Expo 2006, Palm Springs, CA  
<http://www.aopa.org/expo/2005/virtual/>

**November 13-14, 2006** ASTM F38 Unmanned Aircraft Systems Committee Workshop, Hyatt Regency, Atlanta, GA <http://www.astm.org/>

**January 8-11, 2007** - 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/content.cfm?pageid=1>

**May 21-22, 2007** - ASTM F38 Unmanned Aircraft Systems Committee Workshop, Waterside Convention Center, Norfolk, VA <http://www.astm.org/>

**July 22-27, 2007** – 12<sup>th</sup> HCI International, Beijing, China <http://www.hcii2007.org/>

**September 25-27, 2007** - NBAA 60<sup>th</sup> Annual Meeting and Convention, Atlanta, GA  
<http://web.nbaa.org/public/cs/amc/futuresites.php>

*October 1-5, 2007 – Human Factors and Ergonomics Society Annual Meeting, Baltimore Waterfront Marriott Hotel, Baltimore, MD  
<http://www.hfes.org/web/HFESMeetings/meetings.html>*

*Note: Calendar events in Italics are new since the last Newsletter*



Comments or questions regarding this newsletter?  
Please contact Bill Berger at (334) 271-2928  
or via e-mail at [bill.ctr.berger@faa.gov](mailto:bill.ctr.berger@faa.gov)